



# Drinking Water Standards and Health Advisories



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# **DRINKING WATER STANDARDS AND HEALTH ADVISORIES**

**Office of Water  
U.S. Environmental Protection Agency  
Washington, D.C.**

**Summer 2000**

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The *Drinking Water Standards and Health Advisories* tables are revised periodically by EPA's Office of Water on an "as needed" basis. This Summer 2000 edition of the tables has undergone rather extensive revisions in format and content. The changes are as follows:

The tables are in PDF format to facilitate their printing from the internet.

The Health Advisory status column includes the year of publication for the final or draft Health Advisory. Final Health Advisories have been externally peer reviewed; draft documents have not.

Reference dose (RfD) values have been updated to reflect the values in the Integrated Risk Information System (IRIS), and the Drinking Water Equivalent Level (DWEL) has been calculated accordingly. Thus, both the RfD and DWEL will differ from the values in the Health Advisory document if the IRIS value is more recent than the Health Advisory. The RfD values from IRIS that differ from the values in the Health Advisory documents are in **BOLD** type to distinguish them from the other values. For chemicals with a new IRIS RfD, the lifetime Health Advisory was calculated from the DWEL using the relative source contribution values published in the Health Advisory. Where the revised lifetime value differed from the Maximum Contaminant Level Goal (MCLG), no lifetime value was provided in the Table.

For regulated chemicals, the cancer group designation reflects the status at the time of regulation.

Several pesticides listed in IRIS have been re-evaluated by the Office of Pesticide Programs (OPP) resulting in an RfD other than that in IRIS. For these pesticides, the IRIS value is listed in the Table, and the newer OPP value is given in a footnote.

The longer term Health Advisory values for children and adults were deleted from the table. A large number of these values should be reevaluated in the light of new data. However, due to resource limitations at this time, the Office of Science and Technology (OST) has not been able to update the longer term values.

In some cases there is a Health Advisory value for a contaminant but there is no reference to a Health Advisory document. These Health Advisory values can be found in the Drinking Water Criteria Document for the contaminant.

With a few exceptions, the Health Advisory values have been rounded to one significant figure.

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The *Drinking Water Standards and Health Advisories* tables may be reached from the Office of Science and Technology home page at

<http://www.epa.gov/OST>

The tables are accessed under the OST Programs heading on the OST Home Page.

Although no permanent mailing list is kept, copies may be ordered free of charge from

SAFE DRINKING WATER HOTLINE  
1-800-426-4791  
Monday thru Friday, 9:00 AM to 5:30 PM EST

Copies of the supporting technical documentation for the health advisories can be ordered for a fee on the Internet at

<http://www.epa.gov/OST/orderpubs.html>

or from

Educational Resource Information Center (ERIC)  
1929 Kenny Road  
Columbus, OH 43210-1080  
Telephone number 614-292-6717; 1-800-276-0462  
FAX 614-292-0263  
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Payment by Purchase Order/Check/Visa or Mastercard.

For further information regarding the *Drinking Water Standards and Health Advisories*, call the Safe Drinking Water Hotline at 1-800-426-4791 or 703-285-1093.

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## DEFINITIONS

The following definitions for terms used in the Tables are not all-encompassing, and should not be construed to be “official” definitions. They are intended to assist the user in understanding terms found on the following pages.

**Action Level:** The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow. For lead or copper it is the level which, if exceeded in over 10% of the homes tested, triggers treatment.

**Cancer Group:** A qualitative weight-of-evidence judgement as to the likelihood that a chemical may be a carcinogen for humans. Each chemical is placed into one of the following five categories:

Group	Category
A	Human carcinogen
B	Probable human carcinogen: B1 indicates limited human evidence; B2 indicates sufficient evidence in animals and inadequate or no evidence in humans
C	Possible human carcinogen
D	Not classifiable as to human carcinogenicity
E	Evidence of noncarcinogenicity for humans

This categorization is based on EPA’s 1986 *Guidelines for Carcinogen Risk Assessment*. The *Proposed Guidelines for Carcinogen Risk Assessment* which were published in 1996, when final, will replace the 1986 cancer guidelines.

**10<sup>-4</sup> Cancer Risk:** The concentration of a chemical in drinking water corresponding to an estimated lifetime cancer risk of 1 in 10,000.

**DWEL:** Drinking Water Equivalent Level. A lifetime exposure concentration protective of adverse, non-cancer health effects, that assumes all of the exposure to a contaminant is from drinking water.

**HA:** Health Advisory. An estimate of acceptable drinking water levels for a chemical substance based on health effects information; a Health Advisory is not a legally enforceable Federal standard, but serves as technical guidance to assist Federal, state, and local officials.

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**One-day HA:** The concentration of a chemical in drinking water that is not expected to cause any adverse noncarcinogenic effects for up to one day of exposure.

**Ten-day HA:** The concentration of a chemical in drinking water that is not expected to cause any adverse noncarcinogenic effects for up to ten days of exposure.

**Lifetime HA:** The concentration of a chemical in drinking water that is not expected to cause any adverse noncarcinogenic effects for a lifetime of exposure.

**LED<sub>10</sub>:** Lower Limit on Effective Dose<sub>10</sub>. The 95% lower confidence limit of the dose of a chemical needed to produce an adverse effect in 10% of those exposed to the chemical, relative to the control.

**MCLG:** Maximum Contaminant Level Goal. A non-enforceable health goal which is set at a level at which no known or anticipated adverse effect on the health of persons occur and which allows an adequate margin of safety.

**MCL:** Maximum Contaminant Level. The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLG as feasible using the best available treatment technology and taking cost into consideration. MCLs are enforceable standards.

**RfD:** Reference Dose. An estimate (with uncertainty spanning perhaps an order of magnitude) of a daily oral exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime.

**SDWR:** Secondary Drinking Water Regulations. Non-enforceable Federal guidelines regarding cosmetic effects (such as tooth or skin discoloration) or aesthetic effects (such as taste, odor, or color) of drinking water.

**TT:** Treatment Technique. A required process intended to reduce the level of a contaminant in drinking water.

## ABBREVIATIONS

<b>D</b>	Draft
<b>F</b>	Final
<b>NA</b>	Not Applicable
<b>NOAEL</b>	No-Observed-Adverse-Effect-Level
<b>OPP</b>	Office of Pesticide Programs
<b>P</b>	Proposed
<b>Reg</b>	Regulation
<b>TT</b>	Treatment Technique

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Chemicals	Standards			Status HA Document	Health Advisories						Cancer Group
	Status Reg.	MCLG (mg/L)	MCL (mg/L)		10-kg Child						
					One- day (mg/L)	Ten-day (mg/L)	RfD (mg/kg/ day)	DWEL (mg/L)	Lifetime (mg/L)	mg/L at 10 <sup>-4</sup> Cancer Risk	
ORGANICS											
Acenaphthene	-	-	-	-	-	-	0.06	2	-	-	-
Acifluorfen (sodium)		-	-	F '88	2	2	0.01	0.4	-	0.1	B2
Acrylamide	F	zero	TT <sup>1</sup>	F '87	1.5	0.3	0.0002	0.007	-	0.001	B2
Acrylonitrile		-	-	-	-	-	-	-	-	0.006	B1
Alachlor	F	zero	0.002	F '88	0.1	0.1	0.01	0.4	-	0.04 <sup>2</sup>	B2
Aldicarb <sup>3</sup>	F <sup>4</sup>	0.007	0.007	F '95	0.01	0.01	0.001	0.04	0.007	-	D
Aldicarb sulfone <sup>3</sup>	F <sup>4</sup>	0.007	0.007	F '95	0.01	0.01	0.001	0.04	0.007	-	D
Aldicarb sulfoxide <sup>3</sup>	F <sup>4</sup>	0.007	0.007	F '95	0.01	0.01	0.001	0.04	0.007	-	D
Aldrin	-	-	-	F '92	0.0003	0.0003	0.00003	0.001	-	0.0002	B2
Ametryn	-	-	-	F '88	9	9	0.009	0.3	0.06	-	D
Ammonium sulfamate	-	-	-	F '88	20	20	0.2	8	2	-	D
Anthracene (PAH) <sup>5</sup>	-	-	-	-	-	-	0.3	10	-	-	D
Atrazine <sup>6</sup>	F	0.003	0.003	F '88	-	-	0.035	1	0.2	-	C
Baygon	-	-	-	F '88	0.04	0.04	0.004	0.1	0.003	-	C
Bentazon	-	-	-	F '99	0.3	0.3	0.03	1	0.2	-	E
Benz[a]anthracene (PAH)	-	-	-	-	-	-	-	-	-	-	B2
Benzene	F	zero	0.005	F '87	0.2	0.2	-	-	-	0.1	A
Benzo[a]pyrene (PAH)	F	zero	0.0002	-	-	-	-	-	-	0.002	B2
Benzo[b]fluoranthene (PAH)	-	-	-	-	-	-	-	-	-	-	B2
Benzo[g,h,i]perylene (PAH)	-	-	-	-	-	-	-	-	-	-	D
Benzo[k]fluoranthene (PAH)	-	-	-	-	-	-	-	-	-	-	B2
bis-2-Chloroisopropyl ether	-	-	-	F '89	4	4	0.04	1	0.3	-	D
Bromacil	-	-	-	F '88	5	5	0.1	5	0.09	-	C
Bromobenzene	-	-	-	D '86	4	4	-	-	-	-	D

<sup>1</sup> When acrylamide is used in drinking water systems, the combination (or product) of dose and monomer level shall not exceed that equivalent to a polyacrylamide polymer containing 0.05% monomer dosed at 1 mg/L.

<sup>2</sup> Determined not to be carcinogenic at low doses by OPP.

<sup>3</sup> The lifetime HA value or the MCLG/MCL value for any combination of two or more of these three chemicals should remain at 0.007 mg/L because of similar mode of action.

<sup>4</sup> Administrative stay of the effective date.

<sup>5</sup> PAH = Polycyclic aromatic hydrocarbon

<sup>6</sup> Under review

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Chemicals	Standards			Status HA Document	Health Advisories						Cancer Group
	Status Reg.	MCLG (mg/L)	MCL (mg/L)		10-kg Child		RfD (mg/kg/ day)	DWEL (mg/L)	Lifetime (mg/L)	mg/L at 10 <sup>-4</sup> Cancer Risk	
					One- day (mg/L)	Ten-day (mg/L)					
Bromochloromethane	-	-	-	F '89	50	1	0.01	0.5	0.09	-	D
Bromodichloromethane (THM)	F	zero	0.08 <sup>1</sup>	D '93	6	6	0.02	0.7	-	0.06	B2
Bromoform (THM)	F	zero	0.08 <sup>1</sup>	D '93	5	2	0.02	0.7	-	0.4	B2
Bromomethane	-	-	-	D '89	0.1	0.1	0.001	0.05	0.01	-	D
Butyl benzyl phthalate (PAE) <sup>2</sup>	-	-	-	-	-	-	0.2	7	-	-	C
Butylate	-	-	-	F '89	2	2	0.05	2	0.4	-	D
Carbaryl	-	-	-	F '88	1	1	0.1	4	0.7	-	D
Carbofuran <sup>3</sup>	F	0.04	0.04	F '87	0.05	0.05	0.005	0.2	0.04	-	E
Carbon tetrachloride	F	zero	0.005	F '87	4	0.2	0.0007	0.03	-	0.03	B2
Carboxin	-	-	-	F '88	1	1	0.1	4	0.7	-	D
Chloramben	-	-	-	F '88	3	3	0.015	0.5	0.1	-	D
Chlordane	F	zero	0.002	F '87	0.06	0.06	<b>0.0005</b>	0.02	-	0.001	B2
Chloroform (THM)	F	zero	0.08 <sup>1</sup>	D '93	4	4	0.01	0.4	-	0.6	B2
Chloromethane	-	-	-	F '89	9	0.4	0.004	0.1	0.003	-	C
Chlorophenol (2-)	-	-	-	D '94	0.5	0.5	0.005	0.2	0.04	-	D
p-Chlorophenyl methyl sulfide/sulfone/sulfoxide	-	-	-	-	-	-	-	-	-	-	D
Chlorothalonil	-	-	-	F '88	0.2	0.2	0.015	0.5	-	0.15	B2
Chlorotoluene o-	-	-	-	F '89	2	2	0.02	0.7	0.1	-	D
Chlorotoluene p-	-	-	-	F '89	2	2	0.02	0.7	0.1	-	D
Chlorpyrifos	-	-	-	F '92	0.03	0.03	0.003	0.1	0.02	-	D
Chrysene (PAH)	-	-	-	-	-	-	-	-	-	-	B2
Cyanazine	-	-	-	D '96	0.1	0.1	0.002	0.07	0.001	-	-

<sup>1</sup> 1998 Final Rule for Disinfectants and Disinfection By-products: The total for trihalomethanes is 0.08 mg/L.

<sup>2</sup> PAE = phthalate acid ester

<sup>3</sup> Under review



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Chemicals	Standards			Status HA Document	Health Advisories						Cancer Group
	Status Reg.	MCLG (mg/L)	MCL (mg/L)		10-kg Child		RfD (mg/kg/ day)	DWEL (mg/L)	Lifetime (mg/L)	mg/L at 10 <sup>-4</sup> Cancer Risk	
					One- day (mg/L)	Ten-day (mg/L)					
Cyanogen chloride <sup>1</sup>	-	-	-	-	0.05	0.05	0.05	2	-	-	D
2,4-D (2,4- dichlorophenoxyacetic acid)	F	0.07	0.07	F '87	1	0.3	0.01	0.4	0.07	-	D
DCPA (Dacthal)	-	-	-	F '88	80	80	<b>0.01</b>	0.4	0.07	-	D
Dalapon (sodium salt)	F	0.2	0.2	F '89	3	3	0.03	0.9	0.2	-	D
Di(2-ethylhexyl)adipate	F	0.4	0.4	-	20	20	0.6	20	0.4	3	C
Di(2-ethylhexyl)phthalate (PAE)	F	zero	0.006	-	-	-	0.02	0.7	-	0.3	B2
Diazinon	-	-	-	F '88	0.02	0.02	0.00009	0.003	0.0006	-	E
Dibromochloromomethane (THM)	F	0.06	0.08 <sup>2</sup>	D '93	6	6	0.02	0.7	0.06	0.04	C
Dibromochloropropane (DBCP)	F	zero	0.0002	F '87	0.2	0.05	-	-	-	0.003	B2
Dibutyl phthalate (PAE)	-	-	-	-	-	-	0.1	4	-	-	D
Dicamba	-	-	-	F '88	0.3	0.3	0.03	1	0.2	-	D
Dichloroacetic acid	F	zero	0.06 <sup>3</sup>	D '93	5	5	0.004	0.1	-	- <sup>4</sup>	B2
Dichlorobenzene o-	F	0.6	0.6	F '87	9	9	0.09	3	0.6	-	D
Dichlorobenzene m- <sup>5</sup>	-	-	-	F '87	9	9	0.09	3	0.6	-	D
Dichlorobenzene p-	F	0.075	0.075	F '87	11	11	0.1	4	0.075	-	C
Dichlorodifluoromethane	-	-	-	F '89	40	40	0.2	5	1	-	D
Dichloroethylene (1,1-)	F	0.007	0.007	F '87	2	1	0.01	0.4	0.007	-	C
Dichloroethane (1,2-)	F	zero	0.005	F '87	0.7	0.7	-	-	-	0.04	B2
Dichloroethylene (cis-1,2-)	F	0.07	0.07	F '90	4	1	0.01	0.4	0.07	-	D
Dichloroethylene (trans-1,2-)	F	0.1	0.1	F '87	20	1	<b>0.02</b>	0.7	0.1	-	D
Dichloromethane	F	zero	0.005	D '93	10	2	0.06	2	-	0.5	B2
Dichlorophenol (2,4-)	-	-	-	D '94	0.03	0.03	0.003	0.1	0.02	-	E
Dichloropropane (1,2-)	F	zero	0.005	F '87	-	0.09	-	-	-	0.06	B2
Dichloropropene (1,3-)	-	-	-	F '88	0.03	0.03	<b>0.03</b>	1	-	<b>0.04</b>	B2
Dieldrin	-	-	-	F '88	0.0005	0.0005	0.00005	0.002	-	0.0002	B2
Diethyl phthalate (PAE)	-	-	-	-	-	-	0.8	30	-	-	D

<sup>1</sup> Under review

<sup>2</sup> 1998 Final Rule for Disinfectants and Disinfection By-products: The total for trihalomethanes is 0.08 mg/L.

<sup>3</sup> 1998 Final Rule for Disinfectants and Disinfection By-products: The total for five haloacetic acids is 0.06 mg/L.

<sup>4</sup> A quantitative risk estimate has not been determined.

<sup>5</sup> The values for m-dichlorobenzene are based on data for o-dichlorobenzene.

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Chemicals	Standards			Status HA Document	Health Advisories						Cancer Group
	Status Reg.	MCLG (mg/L)	MCL (mg/L)		10-kg Child		RfD (mg/kg/ day)	DWEL (mg/L)	Lifetime (mg/L)	mg/L at 10 <sup>-4</sup> Cancer Risk	
					One- day (mg/L)	Ten-day (mg/L)					
Diisopropyl methylphosphonate	-	-	-	F '89	8	8	0.08	3	0.6	-	D
Dimethrin	-	-	-	F '88	10	10	0.3	10	2	-	D
Dimethyl methylphosphonate	-	-	-	F '92	2	2	0.2	7	0.1	0.7	C
Dimethyl phthalate (PAE)	-	-	-	-	-	-	-	-	-	-	D
Dinitrobenzene (1,3-)	-	-	-	F '91	0.04	0.04	0.0001	0.005	0.001	-	D
Dinitrotoluene (2,4-)	-	-	-	F '92	0.50	0.50	0.002	0.1	-	0.005	B2
Dinitrotoluene (2,6-)	-	-	-	F '92	0.40	0.40	0.001	0.04	-	0.005	B2
Dinitrotoluene (2,6 & 2,4) <sup>1</sup>	-	-	-	F '92	-	-	-	-	-	0.005	B2
Dinoseb	F	0.007	0.007	F '88	0.3	0.3	0.001	0.04	0.007	-	D
Dioxane p-	-	-	-	F '87	4	0.4	-	-	-	<b>0.3</b>	B2
Diphenamid	-	-	-	F '88	0.3	0.3	0.03	1	0.2	-	D
Diquat	F	0.02	0.02	-	-	-	<b>0.002</b>	0.07	-	-	D
Disulfoton	-	-	-	F '88	0.01	0.01	0.00004	0.001	0.0003	-	E
Dithiane (1,4-)	-	-	-	F '92	0.4	0.4	0.01	0.4	0.08	-	D
Diuron	-	-	-	F '88	1	1	0.002 <sup>2</sup>	0.07	0.01	-	D
Endothall	F	0.1	0.1	F '88	0.8	0.8	0.02	0.7	0.1	-	D
Endrin	F	0.002	0.002	F '87	0.02	0.005	<b>0.0003</b>	0.01	0.002	-	D
Epichlorohydrin	F	zero	TT <sup>3</sup>	F '87	0.1	0.1	0.002	0.07	-	0.4	B2
Ethylbenzene	F	0.7	0.7	F '87	30	3	0.1	3	0.7	-	D
Ethylene dibromide (EDB) <sup>4</sup>	F	zero	0.00005	F '87	0.008	0.008	-	-	-	0.00005	B2
Ethylene glycol	-	-	-	F '87	20	6	2	70	14	-	D
Ethylene Thiourea (ETU)	-	-	-	F '88	0.3	0.3	<b>0.00008</b>	0.003	-	0.02	B2
Fenamiphos	-	-	-	F '88	0.009	0.009	0.00025	0.009	0.002	-	D

<sup>1</sup> technical grade.

<sup>2</sup> New OPP RfD = 0.003 mg/kg/day.

<sup>3</sup> When epichlorohydrin is used in drinking water systems, the combination (or product) of dose and monomer level shall not exceed that equivalent to an epichlorohydrin-based polymer containing 0.01% monomer dosed at 20 mg/L.

<sup>4</sup> 1,2-dibromomethane

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Chemicals	Standards			Status HA Standards	Health Advisories						Cancer Group
	Status Reg.	MCLG (mg/L)	MCL (mg/L)		10-kg Child		RfD (mg/kg/ day)	DWEL (mg/L)	Lifetime (mg/L)	mg/L at 10 <sup>-4</sup> Cancer Risk	
					One- day (mg/L)	Ten- day (mg/L)					
Fluometuron	-	-	-	F '88	2	2	0.01	0.5	0.09	-	D
Fluorene (PAH)	-	-	-	-	-	-	0.04	1	-	-	D
Fonofos	-	-	-	F '88	0.02	0.02	0.002	0.07	0.01	-	D
Formaldehyde	-	-	-	D '93	10	5	0.15	5	1	-	B1 <sup>1</sup>
Glyphosate	F	0.7	0.7	F '88	20	20	0.1 <sup>2</sup>	4	0.7	-	D
Heptachlor	F	zero	0.0004	F '87	0.01	0.01	0.0005	0.02	-	0.0008	B2
Heptachlor epoxide	F	zero	0.0002	F '87	0.01	-	0.00001	0.0004	-	0.0004	B2
Hexachlorobenzene	F	zero	0.001	F '87	0.05	0.05	0.0008	0.03	-	0.002	B2
Hexachlorobutadiene	-	-	-	F '89	0.3	0.3	0.002	0.07	0.001	0.05	C
Hexachlorocyclopentadiene	F	0.05	0.05	-	-	-	0.007	0.2	-	-	D
Hexachloroethane	-	-	-	F '91	5	5	0.001	0.04	0.001	-	C
Hexane (n-)	-	-	-	F '87	10	4	-	-	-	-	D
Hexazinone	-	-	-	F '96	3	2	0.05 <sup>3</sup>	2	0.4	-	D
HMX <sup>4</sup>	-	-	-	F '88	5	5	0.05	2	0.4	-	D
Indeno[1,2,3,-c,d]pyrene (PAH)	-	-	-	-	-	-	-	-	-	-	B2
Isophorone	-	-	-	F '92	15	15	0.2	7	0.1	4	C
Isopropyl methylphosphonate	-	-	-	F '92	30	30	0.1	4	0.7	-	D
Isopropylbenzene (cumene)	-	-	-	D '87	11	11	0.1	4	-	-	D
Lindane <sup>5</sup>	F	0.0002	0.0002	F '87	1	1	0.0003	0.01	0.0002	-	C
Malathion	-	-	-	F '92	0.2	0.2	0.02	0.8	0.1	-	D
Maleic hydrazide	-	-	-	F '88	10	10	0.5	20	4	-	D
MCPA <sup>6</sup>	-	-	-	F '88	0.1	0.1	0.0005 <sup>7</sup>	0.02	0.004	-	D
Methomyl	-	-	-	F '88	0.3	0.3	0.025	0.9	0.2	-	E
Methoxychlor	F	0.04	0.04	F '87	0.05	0.05	<b>0.005</b>	0.2	0.04	-	D
Methyl ethyl ketone	-	-	-	F '87	75	7.5	<b>0.6</b>	20	-	-	D
Methyl parathion	-	-	-	F '88	0.3	0.3	0.00025	0.009	0.002	-	D

<sup>1</sup> Carcinogenicity based on inhalation exposure.

<sup>2</sup> New OPP RfD = 2 mg/kg/day.

<sup>3</sup> The Health Advisory is based on a new OPP RfD rather than the IRIS RfD.

<sup>4</sup> HMX = octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine

<sup>5</sup> Lindane =  $\gamma$ -hexachlorocyclohexane

<sup>6</sup> MCPA = 4(chloro-2-methoxyphenoxy)acetic acid

<sup>7</sup> New OPP RfD = 0.0015 mg/kg/day

# Drinking Water Standards and Health Advisories

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Chemicals	Standards			Status HA Document	Health Advisories						Cancer Group
	Status Reg.	MCLG (mg/L)	MCL (mg/L)		10-kg Child		RfD (mg/kg/ day)	DWEL (mg/L)	Lifetime (mg/L)	mg/L at 10 <sup>-4</sup> Cancer Risk	
					One- day (mg/L)	Ten-day (mg/L)					
Metolachlor	-	-	-	F '88	2	2	0.15 <sup>1</sup>	0.5	0.1	-	C
Metribuzin	-	-	-	F '88	5	5	0.025 <sup>2</sup>	0.9	0.2	-	D
Monochloroacetic acid	F	-	0.06 <sup>3</sup>	-	-	-	-	-	-	-	-
Monochlorobenzene	F	0.1	0.1	F '87	4	4	0.02	0.7	0.1	-	D
Naphthalene	-	-	-	F '90	0.5	0.5	0.02	0.7	0.1	-	C
Nitrocellulose (non-toxic)	-	-	-	F '88	-	-	-	-	-	-	-
Nitroguanidine	-	-	-	F '90	10	10	0.1	4	0.7	-	D
Nitrophenol p-	-	-	-	F '92	0.8	0.8	0.008	0.3	0.06	-	D
Oxamyl (Vydate)	F	0.2	0.2	F '87	0.2	0.2	0.025	0.9	0.2	-	E
Paraquat	-	-	-	F '88	0.1	0.1	0.0045	0.2	0.03	-	C
Pentachlorophenol	F	zero	0.001	F '87	1	0.3	0.03	1	-	0.03	B2
Phenanthrene (PAH)	-	-	-	-	-	-	-	-	-	-	D
Phenol	-	-	-	D '92	6	6	0.6	20	4	-	D
Picloram	F	0.5	0.5	F '88	20	20	0.07 <sup>4</sup>	2	0.5	-	D
Polychlorinated biphenyls (PCBs)	F	zero	0.0005	D '93	-	-	-	-	-	0.01	B2
Prometon <sup>5</sup>	-	-	-	F '88	0.2	0.2	0.015	0.5	0.1	-	D
Pronamide	-	-	-	F '88	0.8	0.8	0.075	3	0.05	-	C
Propachlor	-	-	-	F '88	0.5	0.5	0.01	0.5	0.09	-	D
Propazine	-	-	-	F '88	1	1	0.02	0.7	0.01	-	C
Propham	-	-	-	F '88	5	5	0.02	0.6	0.1	-	D
Pyrene (PAH)	-	-	-	-	-	-	0.03	-	-	-	D
RDX <sup>6</sup>	-	-	-	F '88	0.1	0.1	0.003	0.1	0.002	0.03	C
Simazine	F	0.004	0.004	F '88	0.5	0.5	0.005	0.2	0.004	-	C
Styrene	F	0.1	0.1	F '87	20	2	0.2	7	0.1	-	C
2,4,5-T (Trichlorophenoxyacetic acid)	-	-	-	F '88	0.8	0.8	0.01	0.4	0.07	-	D

<sup>1</sup> New OPP RfD = 0.1 mg/kg/day

<sup>2</sup> New OPP RfD = 0.013 mg/kg/day

<sup>3</sup> 1998 Final Rule for Disinfectants and Disinfection By-products: the total for five haloacetic acids is 0.06mg/L.

<sup>4</sup> New OPP RfD = 0.2 mg/kg/day

<sup>5</sup> Under review.

<sup>6</sup> RDX = hexahydro-1,3,5-trinitro-1,3,5-triazine

# Drinking Water Standards and Health Advisories

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Chemicals	Standards			Status HA Document	Health Advisories						Cancer Group
	Status Reg.	MCLG (mg/L)	MCL (mg/L)		10-kg Child		RfD (mg/kg/ day)	DWEL (mg/L)	Lifetime (mg/L)	mg/L at 10 <sup>-4</sup> Cancer Risk	
					One- day (mg/L)	Ten-day (mg/L)					
2,3,7,8-TCDD (Dioxin)	F	zero	3E-08	F '87	1E-06	1E-07	1E-09	4E-08	-	2E-08	B2
Tebuthiuron	-	-	-	F '88	3	3	0.07	2	0.5	-	D
Terbacil	-	-	-	F '88	0.3	0.3	0.01	0.4	0.09	-	E
Terbufos	-	-	-	F '88	0.005	0.005	0.0001	0.005	0.0009	-	D
Tetrachloroethane (1,1,1,2-)	-	-	-	F '89	2	2	0.03	1	0.07	0.1	C
Tetrachloroethane (1,1,2,2-)	-	-	-	F '89	0.04	0.04	0.00005	0.002	0.0003	0.02	C
Tetrachloroethylene	F	zero	0.005	F '87	2	2	0.01	0.5	0.01	-	-
Trichlorofluoromethane	-	-	-	F '89	7	7	0.3	10	2	-	D
Toluene	F	1	1	D '93	20	2	0.2	7	1	-	D
Toxaphene	F	zero	0.003	F '96	0.004	0.004	0.0004	0.01	-	0.003	B2
2,4,5-TP (Silvex)	F	0.05	0.05	F '88	0.2	0.2	0.008	0.3	0.05	-	D
Trichloroacetic acid	F	0.3	0.06 <sup>1</sup>	D '96	4	4	0.1	4.0	0.3	-	C
Trichlorobenzene (1,2,4-)	F	0.07	0.07	F '89	0.1	0.1	0.001	0.05	0.01	-	D
Trichlorobenzene (1,3,5-)	-	-	-	F '89	0.6	0.6	0.006	0.2	0.04	-	D
Trichloroethane (1,1,1-)	F	0.2	0.2	F '87	100	40	0.035	1	0.2	-	D
Trichloroethane (1,1,2-)	F	0.003	0.005	F '89	0.6	0.4	0.004	0.1	0.003	0.06	C
Trichloroethylene <sup>2</sup>	F	zero	0.005	F '87	-	-	0.007	0.2	-	0.2	B2
Trichlorophenol (2,4,6-)	-	-	-	D '94	0.03	0.03	0.0003	0.01	-	0.3	B2
Trichloropropane (1,2,3-)	-	-	-	F '89	0.6	0.6	0.006	0.2	0.04	-	-
Trifluralin	-	-	-	F '90	0.08	0.08	0.0075	0.3	0.005	0.5	C
Trimethylbenzene (1,2,4-)	-	-	-	D '87	-	-	-	-	-	-	D
Trimethylbenzene (1,3,5-)	-	-	-	D '87	10	-	-	-	-	-	D
Trinitroglycerol	-	-	-	F '87	0.005	0.005	-	-	0.005	0.2	-
Trinitrotoluene (2,4,6-)	-	-	-	F '89	0.02	0.02	0.0005	0.02	0.002	0.1	C
Vinyl chloride <sup>2</sup>	F	zero	0.002	F '87	3	3	-	-	-	0.002	A
Xylenes	F	10	10	D '93	40	40	2	70	10	-	D

<sup>1</sup> 1998 Final Rule for Disinfectants and Disinfection By-products: The total for five haloacetic acids is 0.06 mg/L.

<sup>2</sup> Under review

# Drinking Water Standards and Health Advisories

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Chemicals	Standards			Status HA Document	Health Advisories						Cancer Group
	Status Reg.	MCLG (mg/L)	MCL (mg/L)		10-kg Child						
					One- day (mg/L)	Ten-day (mg/L)	RfD (mg/kg/ day)	DWEL (mg/L)	Lifetime (mg/L)	mg/L at 10 <sup>-4</sup> Cancer Risk	
INORGANICS											
Ammonia	-	-	-	D '92	-	-	-	-	30	-	D
Antimony	F	0.006	0.006	F '92	0.01	0.01	0.0004	0.01	0.006	-	D
Arsenic	P	zero	0.005	D '95	-	-	-	-	-	0.002	A
Asbestos (fibers/l >10 <sub>μ</sub> m length)	F	7 MFL <sup>1</sup>	7 MFL	-	-	-	-	-	-	700 MFL	A <sup>2</sup>
Barium	F	2	2	D '93	0.7	0.7	<b>0.07</b>	2	2	-	D
Beryllium	F	0.004	0.004	F '92	30	30	<b>0.002</b>	0.07	-	-	-
Boron <sup>3</sup>	-	-	-	D '92	4	0.9	0.09	3	0.6	-	D
Bromate	F	zero	0.01	D '98	0.2	-	-	-	-	0.005	B2
Cadmium	F	0.005	0.005	F '87	0.04	0.04	0.0005	0.02	0.005	-	D
Chloramine <sup>4</sup>	F	4 <sup>5</sup>	4 <sup>5</sup>	D '95	1	1	0.1	3.5	3.0	-	-
Chlorine	F	4	4	D '95	3	3	0.1	5	4	-	D
Chlorine dioxide	F	0.8 <sup>5</sup>	0.8 <sup>5</sup>	D '98	0.84	0.84	0.03	1	0.8	-	D
Chlorite	F	0.8	1	D '98	0.84	0.84	0.03	1	0.8	-	D
Chromium (total)	F	0.1	0.1	F '87	1	1	<b>0.003<sup>6</sup></b>	0.1	-	-	D
Copper (at tap)	F	1.3	TT <sup>7</sup>	D '98	-	-	-	-	-	-	D
Cyanide	F	0.2	0.2	F '87	0.2	0.2	0.02 <sup>8</sup>	0.8	0.2	-	D
Fluoride	F	4	4	-	-	-	0.06 <sup>9</sup>	-	-	-	-
Lead (at tap)	F	zero	TT <sup>7</sup>	-	-	-	-	-	-	-	B2
Manganese	-	-	-	-	-	-	0.14 <sup>10</sup>	-	-	-	-
Mercury (inorganic)	F	0.002	0.002	F '87	0.002	0.002	<b>0.0003</b>	0.01	0.002	-	D
Molybdenum	-	-	-	D '93	0.08	0.08	0.005	0.2	0.04	-	D
Nickel	F	-	-	F '95	1	1	0.02	0.7	0.1	-	-

<sup>1</sup> MFL = million fibers per liter

<sup>2</sup> Carcinogenicity based on inhalation exposure.

<sup>3</sup> Under review.

<sup>4</sup> Monochloramine; measured as free chlorine.

<sup>5</sup> 1998 Final Rule for Disinfectants and Disinfection By-products: MRDLG=Maximum Residual Disinfection Level Goal; and MRDL=Maximum Residual Disinfection Level.

<sup>6</sup> IRIS value for chromium VI.

<sup>7</sup> Copper action level 1.3 mg/L; Lead action level 0.015 mg/L.

<sup>8</sup> This RfD is for Hydrogen Cyanide.

<sup>9</sup> Based on dental fluorosis in children, a cosmetic effect. MCLG based on skeletal fluorosis.

<sup>10</sup> Dietary manganese.

# Drinking Water Standards and Health Advisories

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Chemicals	Standards			Status HA Document	Health Advisories						Cancer Group
	Status Reg.	MCLG (mg/L)	MCL (mg/L)		10-kg Child		RfD (mg/kg/ day)	DWEL (mg/L)	Life- time (mg/L)	mg/L at 10 <sup>-4</sup> Cancer Risk	
					One- day (mg/L)	Ten-day (mg/L)					
Nitrate (as N)	F	10	10	D '93	10 <sup>1</sup>	10 <sup>1</sup>	1.6	-	-	-	-
Nitrite (as N)	F	1	1	D '93	1 <sup>1</sup>	1 <sup>1</sup>	0.16	-	-	-	-
Nitrate + Nitrite (both as N)	F	10	10	D '93	-	-	-	-	-	-	-
Selenium	F	0.05	0.05	-	-	-	0.005	0.2	0.05	-	D
Silver	-	-	-	F '92	0.2	0.2	0.005 <sup>2</sup>	0.2	0.1	-	D
Strontium	-	-	-	D '93	25	25	<b>0.6</b>	20	4	-	D
Thallium	F	0.0005	0.002	F '92	0.007	0.007	0.00007	0.002	0.0005	-	-
White phosphorous	-	-	-	F '90	-	-	0.00002	0.0005	0.0001	-	D
Zinc	-	-	-	D '93	6	6	0.3	10	2	-	D
<b>RADIONUCLIDES</b>											
Beta particle and photon activity (formerly man-made radionuclides) <sup>3</sup>	F	- <sup>4</sup>	4 mrem	-	-	-	-	-	-	4 mrem/y	A
Gross alpha particle activity <sup>3</sup>	F	- <sup>4</sup>	15 pCi/L	-	-	-	-	-	-	15 pCi/L	A
Combined Radium 226 & 228 <sup>3</sup>	F	- <sup>4</sup>	5 pCi/L	-	-	-	-	-	-	-	A
Radon <sup>3</sup>	P	zero	300 pCi/L	-	-	-	-	-	-	150 pCi/L	A
Uranium <sup>3</sup>	P	zero	20 µg/L	-	-	-	0.003	-	-	-	A

<sup>1</sup> These values are calculated for a 4-kg infant and are protective for all age groups.

<sup>2</sup> Based on a cosmetic effect.

<sup>3</sup> Under review.

<sup>4</sup> No final MCLG, but zero proposed in 1991.

## ***Secondary Drinking Water Regulations***

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Chemicals	Status	SDWR
Aluminum	F	0.05 to 0.2 mg/L
Chloride	F	250 mg/L
Color	F	15 color units
Copper	F	1.0 mg/L
Corrosivity	F	non-corrosive
Fluoride	F	2.0 mg/L
Foaming agents	F	0.5 mg/L
Iron	F	0.3 mg/L
Manganese	F	0.05 mg/L
Odor	F	3 threshold odor numbers
pH	F	6.5 — 8.5
Silver	F	0.1 mg/L
Sulfate	F	250 mg/L
Total dissolved solids (TDS)	F	500 mg/L
Zinc	F	5 mg/L



## *Microbiology*

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	Status Reg.	Status HA Document	MCLG	MCL	Treatment Technique
<i>Cryptosporidium</i>	F	F '93	-	TT	Systems that filter must remove 99% of <i>Cryptosporidium</i>
<i>Giardia lamblia</i>	F	-	-	TT	99.9% killed/inactivated
<i>Legionella</i>	F <sup>1</sup>	F '87	zero	TT	No limit; EPA believes that if <i>Giardia</i> and viruses are inactivated, <i>Legionella</i> will also be controlled
Heterotrophic Plate Count (HPC)	F <sup>1</sup>	-	NA	TT	No more than 500 bacterial colonies per milliliter.
Total Coliforms	F	-	5%	-	No more than 5.0% samples total coliform-positive in a month. Every sample that has total coliforms must be analyzed for fecal coliforms; no fecal coliforms are allowed.
Turbidity	F	-	NA	TT	At no time can turbidity go above 5 NTU (nephelometric turbidity units)
Viruses	F <sup>1</sup>	-	zero	TT	99.99% killed/inactivated

<sup>1</sup> Final for systems using surface water; also being considered for regulation under groundwater disinfection rule.

## ***Consumer Acceptability Advisory Table***

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Chemicals	Status	MoE	Taste Threshold	Odor Threshold
Methyl tertiary butyl ether (MtBE)	F	<p>At 20 µg/L, MoE for cancer effects is 40,000 or greater; MoE for non-cancer effects is 120,000 or greater.</p> <p>At 40 µg/L, MoE for cancer effects is 20,000 or greater; MoE for non-cancer effects is 60,000 or greater</p>	40 µg/L	20 µg/L

MoE: Margin of Exposure which is calculated by dividing the NOAELs for non-cancer endpoints or  $LED_{10}$  for cancer effects by 20 µg/L or 40 µg/L.

Taste Threshold: Concentration at which the majority of consumers do not notice an adverse taste in drinking water; it is recognized that some sensitive individuals may detect a chemical at levels below this threshold.

Odor Threshold: Concentration at which the majority of consumers do not notice an adverse odor in drinking water; it is recognized that some sensitive individuals may detect a chemical at levels below this threshold.